NASA TECH BRIEF

Modified Developer Increases Line Resolution in Photosensitive Resist

The problem: To increase the line resolution and reduce the number of pinholes in films formed from a standard commercially available metal etch resist used in thin-film technology and in the fabrication of printed circuitry and semiconductors. Lines narrower than 0.001 inch cannot be produced in the resist because it swells when processed with standard developers. When the thickness of the resist film is reduced to minimize the swelling caused by these developers, pinholes appear in the film.

The solution: An additive is mixed with the developer to reduce the swelling action in the resist and to permit application of relatively thick films in which the formation of pinholes is minimized.

How it's done: The standard developer solution is mixed with 50% by weight of dipropyl carbonate. Lines less than 0.0001 inch wide can be easily produced in the resist using the modified developer and standard etching agents. The usual rinses following the development can be replaced by the dipropyl carbonate to improve the adhesion of the resist to the substrate.

Note:

1. Inquiries concerning this invention may be directed to:

   Technology Utilization Officer
   Goddard Space Flight Center
   Greenbelt, Maryland, 20771
   Reference: B65-10278

Patent status: NASA encourages the immediate commercial use of this invention. It is owned by NASA and inquiries about obtaining royalty-free rights for its commercial use may be made to NASA, Code AGP, Washington, D.C., 20546.

Source: Westinghouse Electric Corporation
under contract to
Goddard Space Flight Center
(GSFC-386)

Categories 01, 03